The following parameters were measured: mitral valve gradient (MVG), mean pulmonary artery wedge (PAW), mean pulmonary artery pressure (PA), Fick cardiac index (CI), mitral valve area (MVA), left ventricular (LV) end-diastolic volume index (EDVI) and LV ejection fraction (EF). Exercise treadmill times (ETT) were also recorded.

Variable	Baseline mean ± SD	Immed. Post mean ± SD	3–6 Month mean ± SD	3.2 yrs mean ± SD
CI (FICK)-REST	2.8 ± 6	3.3 ± 0.8	3.2 ± 0.7	3.3 ± 1.0
CI (FICK)-EXER	3.7 ± 0.8		5.0 ± 0.6	4.8 ± 1.1
MVG-REST	16.2 ± 5.6	5.0 ± 1.9*	6.9 ± 3.2*	8.3 ± 4.7
MVG-EXER	27.1 ± 5.6		18.2 ± 5.7	15.5 ± 7.6
PAW-REST	28 ± 6.9	15.8 ± 3.8*	18.2 ± 6.8*	21.4 ± 5.8
PAW-EXER	45.5 ± 9.6		29.0 ± 8.1	29.6 ± 8.9
MVA-REST	1.1 ± 0.3	2.3 ± 0.6	2.0 ± 0.7	2.0 ± 0.7
MVA-EXER	1.1 ± 0.3		2.4 ± 0.7	2.3 ± 0.9
mPA-REST	43.3 ± 13.4	33.1 ± 9.8	28.3 ± 10.2	31.3 ± 10.2
mPA-EXER	64.8 ± 21.4		43.1 ± 11.6	41.9 ± 15.7
LVEDVI	73.3 ± 18.2	79.6 ± 17.2	82.7 ± 21.3	79.3 ± 13.8
LVEF	0.58 ± 0.06	0.60 ± 0.06*	0.59 ± 0.10*	0.68 ± 0.06
ETT TIMES (SEC)	442 ± 180		596 ± 114	520 ± 158

*p-value ≤ 0.05 For 3–6 month and Late follow-up vs. Immediate post CBC (ANOVA with repeated measures)

Conclusion: Patients who are clinically stable (FC I or II) show sustained improvement in hemodynamics and ETT immediately post-CBC to an average of 3.2 yrs later; LV size and function remains normal.

1024-80 Mitral Stenosis and Pregnancy: Balloon Valvuloplasty Against Open Comissurotomy

Daniel Born, José A. Souza, Antonio C. Carvalho, Orlando Campos, Julio C. Massoneto, Antonio F. Moron, João N. Branco, Enio Buffolo, Dirceu V. Santos, Eulógio Martinez. *Escola Paulista de Medicina, São Paulo, Brazil*

Maternal cardiac disease is among the most significant causes of non-obstetric mortality during pregnancy. Mitral stenosis (MS) is the most frequent valvular disease in women of childbearing age. We reviewed our experience of 636 cases of cardiac disease during pregnancy out of which 363 had rheumatic heart disease and 151 had MS. Forty pts with MS underwent an intervention during pregnancy due to cardiac failure (36 pts) or hemoptysis (4 pts). Open comissurotomy with high flow and without hypothermia was performed in 24 pts in the last thirteen years, gestational age varying from 4 to 30 weeks, anoxia from 7 to 28 minutes and perfusion time from 12 to 41 minutes. One woman and her fetus died due to coagulopathy in the intraoperative period; no further maternal morbidity occurred but there were 4 other fetal deaths in the immediate postoperative period, prematurity was 40% and small for gestational age 13.3% in 15 newborns delivered at our hospital. Sixteen pts underwent mitral balloon valvuloplasty (MBV) in the last three years, gestational age varying from 5 to 34 weeks with an average Block score of 7. All of them improved the mitral valve area by more than 50%, mean area by echo-Doppler increasing from 0.9 to 1.8 cm^2 with the mean left atrium-LV gradient falling from 19.0 to 5.0 mmHg. Mitral insufficiency was rated as ++/++++ in 2 pts and pericardial perforation occurred in 3 pts without tamponade. Maternal mortality was 0% and no pt had to go to surgery during pregnancy but there was 1 fetal death (6.2%); one premature and one baby small for gestational age occurred in the other 15 deliveries. MBV compares favourably against open comissurotomy in pregnant women with MS concerning: maternal death (0.0% × 4.1%), fetal death (6.2% × 20.8% — $p < 0.05$), prematurity (6.2% × 40.0% — $p < 0.05$) and small for gestational age (6.2% × 13.3%). MBV is now the procedure of choice at our institution for pts with MS that require an intervention during pregnancy.

1024-81 Aortic Dilation in Young Males with Isolated Normally Functioning Bicuspid Aortic Valve

Stefano Nistri [1], Maria Domenica Sorbo [1], Marco Marin [2], Monica Palisi [2], Roldano Scognamiglio [2]. [1] *Militay Hospital, Verona;* [2] *Department of Cardiology, Padua*

Bicuspid aortic valve (BAV) is a common congenital disorder frequently coexisting with abnormalities of the aortic arch including aortic coarctation, dissecting aneurysm and aortic root dilation: it has been suggested that these associations result from a common developmental defect. Moreover, aortic root dimensions are influenced by age and body size; thus, in order to test the hypothesis of a common congenital disorder underlying BAV and aortic dilation, we prospectively studied young males with isolated, normally functioning bicuspid aortic valve during the medical examinations for the military service, in comparison with a age-matched group with no cardiovascular abnormalities.

Sixty-three patients (aged 17.8 ± 0.6 year, range 17–19) whose echocardiograms showed a normally functioning BAV were studied at the Military Hospital in Verona by 2D echocardiography with PW, CW and Color Doppler. Seventy subjects, comparable for age (17.82 ± 0.7, range 17–19) and body surface area (1.79 ± 0.09 vs 1.82 ± 0.08, respectively) without clinical and echocardiographic evidence of cardiac abnormalities, were used as control group. Aortic root dimensions were measured by 2D-echocardiography at four levels: 1) anulus, 2) sinuses on Valsalva, 3) supraaortic ridge and 4) proximal ascending aorta.

Results (mean ± SD):

Level	BAV	Normals	p
Anulus	2.36 ± 0.31	2.27 ± 0.29	NS
Sinuses of Valsalva	3.16 ± 0.38	2.90 ± 0.32	<0.01
Supraaortic ridge	2.64 ± 0.46	2.50 ± 0.28	0.03
Proximal Ascending Aorta	3.12 ± 0.48	2.71 ± 0.29	<0.01

Conclusion: Aortic root dimensions are significantly greater in young men with normally functioning BAV than in control subjects comparable for gender, age and body size. Noticeably, the aortic root dimensions in patients with BAV are still within the range of normality. These data confirm the hypothesis that BAV and aortic dilation are expression of a common developmental defect.

1024-82 Wound Healing in the Mitral Valve

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To study the healing of wounds in cardiac valves, histologic and ultrastructural studies were performed in the mitral valves of 10 sheep in which a 1 cm long, radially oriented incision had been made at the center of the free edge of the anterior mitral leaflet. Two types of granulation tissue (GT) were associated with healing of these wounds. The first covered the cut edge and consisted of myxomatous tissue that extended from the valvular spongiosa and fibrosa. Maturation of collagen, with formation of thick bundles of fibrils progressed for up to 16 weeks in this tissue, extending from the basal portion of the wound toward the free edge of the leaflet. The second type of GT resembled that seen in areas of reactive fibrosis in regurgitant mitral valves. It was found predominantly on the ventricular surfaces of the leaflets, also extending from their basal portion. At 4–5 weeks, fibroblasts were the only cellular components of GT. Parallel arrays of myofibroblasts were found after 8 weeks. The GT also contained a network of proteoglycan granules, which were more abundant in the ventricular side and increased in amount up to the 12th week, decreasing thereafter. The cut surface was relined by growth and spreading of endothelial cells from both sides of the leaflet. This process began at the most basal region of the wound and was completed at 8 weeks.

Neovascularization was observed in the basal regions of the wounds at 12 weeks. The new vascular structures sprouted from vessels normally present in the spongiosa along the valve ring, and initially consisted of cords of endothelial cells that were surrounded by basement membranes, pericytes and some elastic fibers, but lacked distinct lumina. At 16 weeks, similar vessels extended along the distal area of the wound. In conclusion, the healing of mitral valvular wounds is a slow process that requires 8–12 weeks for the formation of a dense collagenous scar at the edges and complete restoration of the endothelial lining. Progression of healing is associated with the phenotypic modulation of connective tissue cells from fibroblast to myofibroblasts and neovascularization of the valvular spongiosa.

1025 Physiological Consideration in Cardiopulmonary Resuscitation

Wednesday, March 22, 1995, 3:00 p.m.–5:00 p.m.
Ernest N. Morial Convention Center, Hall E
Presentation Hour: 3:00 p.m.–4:00 p.m.

1025-92 Immediate Ventilation Questioned Even with Long Downtime Cardiopulmonary Resuscitation

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Animal studies have demonstrated that ventilation can be deferred for several minutes in witnessed arrest if chest compression is initiated promptly. It is unknown if this observation is also valid in situations of a "prolonged down time". To assess whether immediate ventilation was essential following a prolonged down time arrest, six 20–30 kg, dogs were studied following ventricular fibrillation (VF). Chest compression (no ventilation) at 80–90/min was initiated after 6 min. Aortic pressure (pr) and blood gases were monitored. Pre-VF aortic pr; pH; PCO_2 and O_2 saturation (%O_2 sat) at room air